

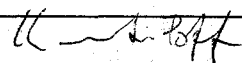
# TEXT SEARCHABLE DOCUMENT

## DATA EVALUATION RECORD DER #1

SHAUGHNESSY No. 003125  
COMMON NAME: Imidacloprid  
CHEMICAL NAME: 1-(2-chloro-5-pyridinylmethyl)-2-nitroimino-imidazolidine  
FORMULATION: Active Ingredient  
DATA REQUIREMENT: Hydrolysis 161-1

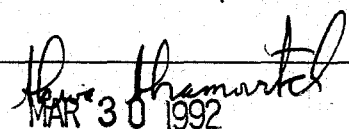
MRID No: 42055337. Yoshida, H. Hydrolysis of NTN 33893. Performing laboratory, Nihon Tokushu Noyaku Seizo K.K., Basic Research Division Environmental Science Research Yuki Institute, 9511-4 Yuki, Yuki-shi Ibaraki 307, Japan. Submitting laboratory Mobay Corporation, Agricultural Chemicals Division Research and Development Department P.O. Box 4913, Kansas City, Missouri 64120

REVIEWED BY: Kevin L. Poff  
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APPROVED BY: Akiva Abramovitch, Ph.D.  
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Signature: 

Date:

MAR 30 1992

### CONCLUSIONS:

#### 161-1 Hydrolysis:

(1) Study MRID #42055337 completely satisfies the Hydrolysis (161-1) data requirement for NTN 33893.

(2) NTN 33893 was stable in pH 5 and 7 buffers in the dark at 25°C, but degraded slightly at pH 9 with a half-life of 355 days. At the end of 30 days at pH 9, 7% of NTN had degraded to and was distributed to 5.3% (0.26 ppm) of product 1 and 1.7% (0.085 ppm) of product 2. Material balances ranged from 99.8 to 104.3%



1) to allow testing of NTN 33893 0.62% granular on areas around airports (limited to 50 acres) to exterminate Japanese beetles to prevent transport to uninfected areas of the United States and other parts of the world. At the use rate of 0.5 lb ai/A, the treatment of 50 acres will require 25 pounds of active ingredient or 4032 pounds of formulated product.

2) To support the testing of NTN 33893 0.62% granular as applied to turf (maximum anticipated acreage will be 420 acres; i.e., 30 acres per golf course times 14 courses in the vicinity of Columbus Ohio) to evaluate possible avian effects. At the use rate of 0.5 lb ai/A, the treatment of 420 acres will require 210 pounds of active ingredient or 33,871 lbs. of formulated product.

However, the EFGWB is concerned about ground and surface water contamination because the hydrolysis and aerobic soil metabolism data indicate that imidacloprid is persistent and the leaching/adsorption/desorption data indicate that imidacloprid is somewhat mobile.

All of the following data supporting the EUP for the terrestrial nonfood use have been submitted to the EFGWB:

-Hydrolysis (161-1); Satisfies the data requirement; Stable at pH 5, 7, some degradation at pH 9  $t_{1/2}$  = 355 days.

-Aerobic soil metabolism (162-1); Satisfies the data requirement; Degraded with a half-life of > 1 year

-Adsorption/Desorption (163-1); Does not satisfy, but can be upgraded.  $K_{d_{ads}}$  values ranged from 1.17-3.59.

-Leaching (163-1); Partially satisfies the 163-1 data requirement by supplying information on the leaching of aged imidacloprid in a sandy loam soil. 48.5% of applied radioactivity remained in the applied soil layer (to top of soil column). 37% of applied was found in the 0-5 cm layer. 10.8% of applied was found in the 5-10 cm layer. 4.2% of applied was found in the 10-15 cm layer. 1.8% was found in the 15-20 cm layer. 0.3% of applied was found in the 20-30 cm layer. 0.14% of the applied was found in the leachate.

-The Bioaccumulation in fish (165-4) study is waived due to the low octanol/water partition coefficient. Subdivision N guidelines state the 165-4 data is not required if the octanol/water partition coefficient is less than approximately 1000. The octanol/water partition coefficient for NTN 33893 is 3.7.

#### 9. BACKGROUND :

NTN 33893 is a systemic insecticide which can act as a contact stomach poison. It is a terrestrial non-food chemical.

10. DISCUSSION: See attached DERS.

11. COMPLETION OF ONE-LINER: N/A

12. CBI INDEX:

Not applicable.

## MATERIALS AND METHODS:

NTN 33893 [pyridinyl-<sup>14</sup>C-methyl], 1-(2-chloro-5-pyridinylmethyl)-2-nitroimino-imidazolidine (99.8% radiochemical purity, 150.68 uCi/mg specific activity) at 5 ppm concentration was incubated for 30 days in the dark in sterilized pH 5, (acetate) 7, (potassium dihydrogenphosphate) and 9 (boric acid) buffer solutions at 25°C. Sampling intervals were 0, 5, 10, 14, 18, 22, 26, and 30 days. Samples were injected directly into HPLC. Parent and degradates were identified by HPLC, TLC, GC-MS, and NMR.

## RESULTS:

Table III, IV and V show the material balance of pH 5, 7, and 9 and product distribution at pH 9. Figure 5 shows the degradation curve and half-life calculation of NTN 33893 at pH 9. Appendix I and II show the structures of the reference substances used.

The findings of the study are:

- (1) NTN 33893 was stable in pH 5 and 7 buffers, but degraded slightly at pH 9 with a half-life of 355 days.
- (2) At the end of 30 days at pH 9, 7% of NTN had degraded to and was distributed to 5.3% (0.26 ppm) of product 1 and 1.7% (0.085 ppm) of product 2.
- (3) Product 1 was not identified after cochromatography with reference standards, GC-MS, and NMR analysis. Product 2 was identified as the keto imidazole form (NTN 33519).
- (4) Total recovery of radioactivity ranged from 99.8 to 104.3%.

## DISCUSSION:

(1) The fact that product 1 was not identified was overlooked since it was not considered environmentally significant by the reviewer. At 30 days at pH 9, product 1 accounted for 5.3% (0.26 ppm) of applied.

(2) This study is acceptable and fulfills the data requirements of the Environmental Protection Agency Pesticide Assessment Guide lines, Subdivision N, Section 161-1 on Hydrolysis.

